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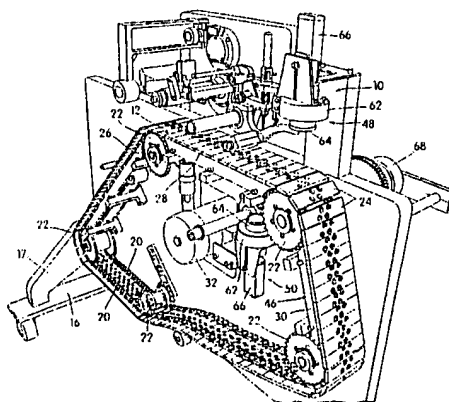
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[Continued on next page]

(54) Title: LASER UNIT, INSPECTION UNIT, METHOD FOR INSPECTING PELLET-SHAPED ARTICLES AND PHARMA-
CEUTICAL ARTICLE



(57) Abstract: A pellet-shaped article inspection unit (10) is structured for use with a conveyer mechanism (12) having a plurality of carrier bars (24), each carrier bar (24) being structured to convey a plurality of pellet-shaped articles along a predetermined path. The article inspection unit (10) includes a first camera unit (48) positioned adjacent a first side of the conveyer mechanism (12). The first camera unit (48) is configured to sense a first predetermined characteristic, e.g., laser holes, of the plurality of pellet-shaped articles. A removal mechanism (46), downstream from the first camera unit (48), is structured to remove or maintain at least a selected one of the plurality of pellet-shaped articles from at least a selected one of the plurality of carrier bars (24) depending on whether the first predetermined characteristic is sensed by the first camera unit (48). A laser unit may be provided to create unique holes in the pellet-shaped articles, e.g., those by a larger exposed surface to improve time-release characteristics of the pellet-shaped articles.



— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/36336

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 21/00; B07C 5/02; G01C 21/02; B23K 26/38

US CL : 356/237.1, 426; 250/559.06; 209/618; 198/530; 219/121.7; 424/473

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
noneElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST and WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,019,326 A (YAGINYMA et al) 28 May 1991 (28.05.1991), figures 1, 5, 25, 26; column 2, lines 28-62, column 6, lines 12-53, column 8, lines 34-67, column 9, lines 12-67.	1-6, 9, 10, 32-37, 40-41 ----- 7-31, 38-63 and 85-86
Y	US 5,147,047 A (AHMED et al) 15 September 1992 (15.09.1992), figure 2, column 4, lines 38-60, column 7, lines 2-42.	11, 12, 42, 43, 48, 49, 57, 58, 62-63, 85, 86 ----- 64-81
X --- Y	US 5,652,432 A (YAGINUMA) 29 July 1997 (29.07.1997), figures 4 and 7, column 5, lines 42-67 and column 6, lines 1-7, column 7, lines 6-17 and column 8, lines 24-45.	8, 17, 26, 39, 55-56 ----- 13-14, 29-31, 85-86, 48-53, 59
Y	US 5,602,646 A (BERNARDIN et al) 11 February 1997 (11.02.1997), figure 6, column 1, lines 42-54, column 2, lines 34-64.	48-53, 59 ----- 82-84
X --- Y	US 5,703,377 A (AINSWORTH et al) 30 December 1997 (30.12.1997), figure 1, column 4, lines 1-8.	7, 24, 38, 54 ----- 87-96
X	US 6,353,203 A (HOKODATE et al) 05 March 2002 (05.03.2002), figure 1.	

☒ Further documents are listed in the continuation of Box C.

See patent family annex.

Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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INTERNATIONAL SEARCH REPORT

In onal application No.

PCT/US03/36336

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

PCT/USO: 5

Continuation of Item 4 of the first sheet:

LASER UNIT, INSPECTION UNIT, METHOD FOR INSPECTING PELLETS SHAPED ARTICLES AND PHARMACEUTICAL ARTICLE

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-63 and 85-86, drawn to a pellet-shape article inspection unit comprising a first camera unit and a removal mechanism.

Group II, claim(s) 64-81, drawn to a carrier base for a conveyer mechanism system.

Group III, claim(s) 82-84, drawn to a camera unit for sensing a plurality of pellet shaped articles on a conveyer mechanism.

Group IV, claim(s) 87-90, drawn to a laser drilling system.

Group V, claim(s) 91-96, drawn to a pharmaceutical articles.

The inventions listed as Groups I, II, III, IV and V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature of Group I relates to an article inspection unit and method thereof, comprises a camera unit, a conveyer mechanism and a removal mechanism, classified in class 356/237.1. The special technical feature of Group II relates to a carrier bar comprises a plurality of pockets for receiving a plurality of pellet-shaped articles and each of the pockets having a throughhole, classified in class 250/223R. The special technical feature of Group III relates to a camera unit comprising a ring light, a lens and a black/white or color 1/3 CCD coupled to the lens, classified in class 348/207. The special technical feature of Group IV relates to a laser drilling system, classified in 219/121.67. The special technical feature of Group V relates to a pharmaceutical article and method for making a pharmaceutical article, classified in class 424/473. Since each of the groups relates to different special technical feature, different classification and different search and examination. Therefore, unity of invention is lacking.

Continuation of B. FIELDS SEARCHED Item 1:

356/237.1-237.5, 426-428; 250/559.06, 223R, 226; 209/618, 579, 580, 587, 559.45; 198/530, 385, 386, 387; 219/121.7, 121.67, 121.84; 424/473, 464, 465, 471, 472, 474, 479, 480

INTERNATIONAL SEARCH REPORT

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,186,942 A (DETERS et al) 16 February 1993 (16.02.1993), column 12, lines 54-65 and figure 2.	87-96
A	US 6,130,405 A (LORINGER) 10 October 2000 (10.10.2000), figure 1.	87-96